AMENDMENTS TO THE CLAIMS:

Please cancel claims 5 and 17 without prejudice or disclaimer, and amend the claims as follows:

1. (Currently Amended) An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

a first photoelectric conversion means and a second photoelectric conversion means, each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; ~~and~~

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means; and

a wavelength control means for detecting change in wavelength based on a calculation result obtained by said calculation means and adjusting said wavelength to a preset value,

wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic.

2. (Previously Presented) An output monitor/control device according to claim 1, wherein said Mach-Zehnder circuit is adjusted in advance such that a wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which

an optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply.

3. (Currently Amended) ~~An output monitor/control device according to claim 2,~~ An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

a first photoelectric conversion means and a second photoelectric conversion means, each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means,

wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic,

wherein said Mach-Zehnder circuit is adjusted in advance such that a wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which an optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply, and

wherein said discrimination formula comprises a ratio of the conversion output of either one of said first and second photoelectric conversion means to a sum of conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means.

4. (Currently Amended) ~~An output monitor/control device according to claim 2,~~ An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

a first photoelectric conversion means and a second photoelectric conversion means, each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means,

wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic,

wherein said Mach-Zehnder circuit is adjusted in advance such that a wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which an optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply, and

wherein said discrimination formula comprises a ratio of the difference between the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means to the sum of the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means.

5. (Canceled)

6. (Previously Presented) An output monitor/control device according to claim 3, further including:

a level calculation means for calculating a sum of the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means to evaluate an intensity variation in a total amount of light that emerges from said Mach-Zehnder circuit; and

a level adjusting means for compensating for variation in a level of light that emerges from said Mach-Zehnder circuit based on said sum of the conversion outputs.

7. (Previously Presented) An output monitor/control device according to claim 2, wherein a wavelength interval that corresponds to said free spectral range is identical to a wavelength interval of an ITU (International Telecommunications Union) grid.

8. (Previously Presented) An optical communication system, comprising:

an optical transmission means for transmitting optical signals of different wavelengths in parallel;

a multiplexer having an arrayed waveguide diffraction grating for performing wavelength division multiplexing of said optical signals transmitted by said optical transmission means;

an optical transmission path for transmitting a wavelength division multiplexed optical signal provided by said multiplexer;

nodes arranged midway on said optical transmission path;

a demultiplexer having an arrayed waveguide diffraction grating for receiving a multiplexed optical signal transmitted by way of said optical transmission path, and

demultiplexes said multiplexed optical signal into optical signals of respective wavelengths; and

an optical receiver for receiving optical signals of each wavelength demultiplexed by said demultiplexer;

wherein said optical transmission means and said nodes each have an output monitor/control device, said output monitor/control device comprising:

an arrayed waveguide diffraction grating for receiving the wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals;

Mach-Zehnder circuits each of which receives a demultiplexed optical signal, branches the demultiplexed optical signal into two light beams having a phase difference of 180°, and transmits each of these light beams, exhibiting a periodic optical transmittance-optical frequency characteristic having a period of a frequency interval that corresponds to a predetermined free spectral range;

sets of first photoelectric conversion means and second photoelectric conversion means each for receiving a respective one of said two light beams that have emerged from said Mach-Zehnder circuit;

calculation means each for calculating a predefined discrimination formula for evaluating a wavelength change in said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means, wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic; and

a wavelength control means for detecting changes in wavelengths based on calculation results obtained by said calculation means and adjusting the wavelengths to preset values.

9. (Previously Presented) An optical communication system according to claim 8, further comprising:

a level control means for compensating for variation in the level of optical signals supplied from said Mach-Zehnder circuit based on a calculation result of a sum of conversion outputs from said first photoelectric conversion means and said second photoelectric conversion means calculated by said calculation means.

10-11. (Canceled)

12. (Previously Presented) An output monitor/control device according to claim 1, further comprising a plurality of Mach-Zehnder circuits each of which receives a demultiplexed optical signal, branches the demultiplexed optical signal into two light beams having a phase difference of 180°, and transmits each of these light beams, exhibiting a periodic optical transmittance-optical frequency characteristic having a period of a frequency interval that corresponds to a predetermined free spectral range.

13. (Previously Presented) An output monitor/control device according to claim 1, wherein the wavelength of said light beams is controlled by varying at least one of a drive current of a light source of said light beams and an ambient temperature.

14. (Previously Presented) An output monitor/control device according to claim 1, wherein said Mach-Zehnder circuit comprises a single-side Mach-Zehnder circuit.

15. (Currently Amended) ~~An output monitor/control device according to claim 1,~~ An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

a first photoelectric conversion means and a second photoelectric conversion means, each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means, wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic, and

wherein said discrimination formula is a ratio of a conversion output of either one of said first and second photoelectric conversion means to a sum of conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means.

16. (Currently Amended) An ~~An output monitor/control device according to claim 1,~~ An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

a first photoelectric conversion means and a second photoelectric conversion means, each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means, wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic, and

wherein said discrimination formula comprises a ratio of a difference between the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means to a sum of the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means.

17. (Canceled)

18. (Previously Presented) An output monitor/control device according to claim 1, further including:

a level calculation means for calculating a sum of the conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means to evaluate an intensity variation in a total amount of light that emerges from said Mach-Zehnder circuit; and

a level adjusting means for compensating for a variation in a level of light that emerges from said Mach-Zehnder circuit based on said sum of the conversion outputs.

19. (Previously Presented) An output monitor/control device according to claim 1, wherein a wavelength interval that corresponds to said free spectral range is identical to a wavelength interval of an ITU (International Telecommunications Union) grid.

20. (Previously Presented) An output monitor/control device according to claim 1, further comprising an arrayed waveguide diffraction grating for receiving a wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals.

21. (Previously Presented) An optical communication system, comprising:

an optical transmission means for transmitting optical signals of different wavelengths in parallel; and

nodes arranged midway on an optical transmission path,

wherein said optical transmission means and said nodes each have an output monitor/control device, said output monitor/control device comprising:

an arrayed waveguide diffraction grating for receiving a wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals;

a plurality of Mach-Zehnder circuits, which receives a demultiplexed optical signal, branches the demultiplexed optical signal into two light beams having a phase difference of 180°, and transmits each of these light beams, exhibiting a periodic optical transmittance-optical frequency characteristic having a period of a frequency interval that corresponds to a predetermined free spectral range; and

calculation means for calculating a predefined discrimination formula for evaluating a wavelength change in said light beams.